



## DEPARTMENT OF COMMERCE

### National Oceanic and Atmospheric Administration

[RTID 0648-XB617]

#### **Taking and Importing Marine Mammals; Taking Marine Mammals Incidental to Geophysical Surveys Related to Oil and Gas Activities in the Gulf of Mexico**

**AGENCY:** National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

**ACTION:** Notice of issuance of Letters of Authorization.

**SUMMARY:** In accordance with the Marine Mammal Protection Act (MMPA), as amended, its implementing regulations, and NMFS' MMPA Regulations for Taking Marine Mammals Incidental to Geophysical Surveys Related to Oil and Gas Activities in the Gulf of Mexico, notification is hereby given that two Letters of Authorization (LOA) have been issued to Shell Offshore Inc. (Shell) for the take of marine mammals incidental to geophysical survey activity in the Gulf of Mexico.

**DATES:** The LOAs are effective from January 1, 2022, through August 31, 2022.

**ADDRESSES:** The LOAs, LOA requests, and supporting documentation are available online at: [www.fisheries.noaa.gov/action/incidental-take-authorization-oil-and-gas-industry-geophysical-survey-activity-gulf-mexico](https://www.fisheries.noaa.gov/action/incidental-take-authorization-oil-and-gas-industry-geophysical-survey-activity-gulf-mexico). In case of problems accessing these documents, please call the contact listed below (see **FOR FURTHER INFORMATION CONTACT**).

**FOR FURTHER INFORMATION CONTACT:** Ben Laws, Office of Protected Resources, NMFS, (301) 427-8401.

#### **SUPPLEMENTARY INFORMATION:**

##### **Background**

Sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 *et seq.*) direct the Secretary of Commerce to allow, upon request, the incidental, but not intentional, taking of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if certain findings are made and either regulations are issued or, if the taking is limited to harassment, a notice of a proposed authorization is provided to the public for review.

An authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s), will not have an unmitigable adverse impact on the availability of the species or stock(s) for subsistence uses (where relevant), and if the permissible methods of taking and requirements pertaining to the mitigation, monitoring and reporting of such takings are set forth. NMFS has defined “negligible impact” in 50 CFR 216.103 as an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival.

Except with respect to certain activities not pertinent here, the MMPA defines “harassment” as: any act of pursuit, torment, or annoyance which (i) has the potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment); or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering (Level B harassment).

On January 19, 2021, we issued a final rule with regulations to govern the unintentional taking of marine mammals incidental to geophysical survey activities conducted by oil and gas industry operators, and those persons authorized to conduct activities on their behalf (collectively “industry operators”), in Federal waters of the U.S. Gulf of Mexico (GOM) over the course of 5 years (86 FR 5322; January 19, 2021). The

rule was based on our findings that the total taking from the specified activities over the 5-year period will have a negligible impact on the affected species or stock(s) of marine mammals and will not have an unmitigable adverse impact on the availability of those species or stocks for subsistence uses. The rule became effective on April 19, 2021.

Our regulations at 50 CFR 217.180 *et seq.* allow for the issuance of LOAs to industry operators for the incidental take of marine mammals during geophysical survey activities and prescribe the permissible methods of taking and other means of effecting the least practicable adverse impact on marine mammal species or stocks and their habitat (often referred to as mitigation), as well as requirements pertaining to the monitoring and reporting of such taking. Under 50 CFR 217.186(e), issuance of an LOA shall be based on a determination that the level of taking will be consistent with the findings made for the total taking allowable under these regulations and a determination that the amount of take authorized under the LOA is of no more than small numbers.

### **Summary of Request and Analysis**

Shell plans to conduct two separate geophysical surveys, and submitted an LOA request for each survey. The first survey is a 3D ocean bottom node (OBN) survey of Mississippi Canyon Lease Block 809 and portions of the surrounding approximately 143 lease blocks in the Ursa development area (Ursa survey). The second survey would also be a 3D OBN survey, and would cover Mississippi Canyon Lease Block 890 and Atwater Canyon and portions of the surrounding approximately 36 lease blocks (Europa survey). See Section F of the respective LOA applications for maps of these areas.

For both surveys, Shell anticipates using an airgun array consisting of 32 elements, with a total volume of 5,110 cubic inches (in<sup>3</sup>). Please see Shell's applications for additional detail.

Consistent with the preamble to the final rule, the survey effort proposed by Shell in its LOA requests was used to develop LOA-specific take estimates based on the

acoustic exposure modeling results described in the preamble (86 FR 5322, 5398; January 19, 2021). In order to generate the appropriate take number for authorization, the following information was considered: (1) survey type; (2) location (by modeling zone<sup>1</sup>); (3) number of days; and (4) season.<sup>2</sup> The acoustic exposure modeling performed in support of the rule provides 24-hour exposure estimates for each species, specific to each modeled survey type in each zone and season.

No 3D OBN surveys were included in the modeled survey types, and use of existing proxies (*i.e.*, 2D, 3D NAZ, 3D WAZ, Coil) is generally conservative for use in evaluation of 3D OBN survey effort, largely due to the greater area covered by the modeled proxies. Summary descriptions of these modeled survey geometries are available in the preamble to the proposed rule (83 FR 29212, 29220; June 22, 2018). Coil was selected as the best available proxy survey type for both surveys in this case, because the spatial coverage of the planned surveys is most similar to the coil survey pattern. The planned 3D OBN surveys will each involve a single source vessel sailing along closely spaced survey lines that are 100 m apart and approximately 30 km in length. The path taken by the vessel to cover these lines will mean that consecutive survey lines sailed will be 400 m apart. The coil survey pattern was assumed to cover approximately 144 kilometers squared ( $\text{km}^2$ ) per day (compared with approximately 795  $\text{km}^2$ , 199  $\text{km}^2$ , and 845  $\text{km}^2$  per day for the 2D, 3D NAZ, and 3D WAZ survey patterns, respectively). Among the different parameters of the modeled survey patterns (*e.g.*, area covered, line spacing, number of sources, shot interval, total simulated pulses), NMFS considers area covered per day to be most influential on daily modeled exposures exceeding Level B harassment criteria. Although Shell is not proposing specifically to perform surveys using

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<sup>1</sup> For purposes of acoustic exposure modeling, the GOM was divided into seven zones. Zone 1 is not included in the geographic scope of the rule.

<sup>2</sup> For purposes of acoustic exposure modeling, seasons include Winter (December-March) and Summer (April-November).

the coil geometry, its planned 3D OBN surveys are expected to cover approximately 15.7 km<sup>2</sup> per day, meaning that the coil proxy is most representative of the effort planned by Shell in terms of predicted Level B harassment exposures.

In addition, all available acoustic exposure modeling results assume use of a 72-element, 8,000 in<sup>3</sup> array. Thus, estimated take numbers for this LOA are considered conservative due to differences in both the airgun array (32 elements, 5,110 in<sup>3</sup>) and the daily survey area planned by Shell (15.7 km<sup>2</sup>), as compared to those modeled for the rule.

The Ursa survey will take place over 61 days, including 45 days of sound source operation. The Europa survey will take place over 122 days, including 20 days of sound source operation. Both surveys will occur within Zone 5. For both surveys, the seasonal distribution of survey days is not known in advance. Therefore, the take estimates for each species are based on the season that produces the greater value.

Additionally, for some species, take estimates based solely on the modeling yielded results that are not realistically likely to occur when considered in light of other relevant information available during the rulemaking process regarding marine mammal occurrence in the GOM. Thus, although the modeling conducted for the rule is a natural starting point for estimating take, our rule acknowledged that other information could be considered (see, *e.g.*, 86 FR 5322, 5442 (January 19, 2021), discussing the need to provide flexibility and make efficient use of previous public and agency review of other information and identifying that additional public review is not necessary unless the model or inputs used differ substantively from those that were previously reviewed by NMFS and the public). For this survey, NMFS has other relevant information reviewed during the rulemaking that indicates use of the acoustic exposure modeling to generate a take estimate for certain marine mammal species produces results inconsistent with what is known regarding their occurrence in the GOM. Accordingly, we have adjusted the calculated take estimates for those species as described below.

Rice's whales (formerly known as GOM Bryde's whales)<sup>3</sup> are generally found within a small area in the northeastern GOM in waters between 100-400 m depth along the continental shelf break (Rosel *et al.*, 2016). Whaling records suggest that Rice's whales historically had a broader distribution within similar habitat parameters throughout the GOM (Reeves *et al.*, 2011; Rosel and Wilcox, 2014), and a NOAA survey reported observation of a Rice's whale in the western GOM in 2017 (NMFS, 2018). Habitat-based density modeling identified similar habitat (*i.e.*, approximately 100-400 m water depths along the continental shelf break) as being potential Rice's whale habitat (Roberts *et al.*, 2016), although a "core habitat area" defined in the northeastern GOM (outside the scope of the rule) contained approximately 92 percent of the predicted abundance of Rice's whales. See discussion provided at, *e.g.*, 83 FR 29212, 29228, 29280 (June 22, 2018); 86 FR 5322, 5418 (January 19, 2021).

Although it is possible that Rice's whales may occur outside of their core habitat, NMFS expects that any such occurrence would be limited to the narrow band of suitable habitat described above (*i.e.*, 100-400 m). Shell's planned activities will occur in water depths of approximately 600-1,800 m and 800-1,400 (Ursa and Europa, respectively) in the central GOM. Thus, NMFS does not expect there to be the reasonable potential for take of Rice's whale in association with this survey and, accordingly, does not authorize take of Rice's whale through this LOA.

Killer whales are the most rarely encountered species in the GOM, typically in deep waters of the central GOM (Roberts *et al.*, 2015; Maze-Foley and Mullin, 2006). The approach used in the acoustic exposure modeling, in which seven modeling zones were defined over the U.S. GOM, necessarily averages fine-scale information about marine mammal distribution over the large area of each modeling zone. NMFS has

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<sup>3</sup> The final rule refers to the GOM Bryde's whale (*Balaenoptera edeni*). These whales were subsequently described as a new species, Rice's whale (*Balaenoptera ricei*) (Rosel *et al.*, 2021).

determined that the approach results in unrealistic projections regarding the likelihood of encountering killer whales.

As discussed in the final rule, the density models produced by Roberts *et al.* (2016) provide the best available scientific information regarding predicted density patterns of cetaceans in the U.S. GOM. The predictions represent the output of models derived from multi-year observations and associated environmental parameters that incorporate corrections for detection bias. However, in the case of killer whales, the model is informed by few data, as indicated by the coefficient of variation associated with the abundance predicted by the model (0.41, the second-highest of any GOM species model; Roberts *et al.*, 2016). The model's authors noted the expected non-uniform distribution of this rarely-encountered species (as discussed above) and expressed that, due to the limited data available to inform the model, it "should be viewed cautiously" (Roberts *et al.*, 2015).

NOAA surveys in the GOM from 1992-2009 reported only 16 sightings of killer whales, with an additional three encounters during more recent survey effort from 2017-18 (Waring *et al.*, 2013; [www.boem.gov/gommapps](http://www.boem.gov/gommapps)). Two other species were also observed on less than 20 occasions during the 1992-2009 NOAA surveys (Fraser's dolphin and false killer whale<sup>4</sup>). However, observational data collected by protected species observers (PSOs) on industry geophysical survey vessels from 2002-2015 distinguish the killer whale in terms of rarity. During this period, killer whales were encountered on only 10 occasions, whereas the next most rarely encountered species (Fraser's dolphin) was recorded on 69 occasions (Barkaszi and Kelly, 2019). The false killer whale and pygmy killer whale were the next most rarely encountered species, with 110 records each. The killer whale was the species with the lowest detection frequency

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<sup>4</sup> However, note that these species have been observed over a greater range of water depths in the GOM than have killer whales.

during each period over which PSO data were synthesized (2002-2008 and 2009-2015). This information qualitatively informed our rulemaking process, as discussed at 86 FR 5322, 5334 (January 19, 2021), and similarly informs our analysis here.

The rarity of encounter during seismic surveys is not likely to be the product of high bias on the probability of detection. Unlike certain cryptic species with high detection bias, such as *Kogia* spp. or beaked whales, or deep-diving species with high availability bias, such as beaked whales or sperm whales, killer whales are typically available for detection when present and are easily observed. Roberts *et al.* (2015) stated that availability is not a major factor affecting detectability of killer whales from shipboard surveys, as they are not a particularly long-diving species. Baird *et al.* (2005) reported that mean dive durations for 41 fish-eating killer whales for dives greater than or equal to 1 minute in duration was 2.3-2.4 minutes, and Hooker *et al.* (2012) reported that killer whales spent 78 percent of their time at depths between 0-10 m. Similarly, Kvadsheim *et al.* (2012) reported data from a study of four killer whales, noting that the whales performed 20 times as many dives to 1-30 m depth than to deeper waters, with an average depth during those most common dives of approximately 3 m.

In summary, killer whales are the most rarely encountered species in the GOM and typically occur only in particularly deep water. While this information is reflected through the density model informing the acoustic exposure modeling results, there is relatively high uncertainty associated with the model for this species, and the acoustic exposure modeling applies mean distribution data over areas where the species is in fact less likely to occur. NMFS' determination in reflection of the data discussed above, which informed the final rule, is that use of the generic acoustic exposure modeling results for killer whales would result in high estimated take numbers that are inconsistent with the assumptions made in the rule regarding expected killer whale take (86 FR 5322, 5403; January 19, 2021).



In past authorizations, NMFS has often addressed situations involving the low likelihood of encountering a rare species such as killer whales in the GOM through authorization of take of a single group of average size (*i.e.*, representing a single potential encounter). See 83 FR 63268, December 7, 2018. See also 86 FR 29090, May 28, 2021; 85 FR 55645, September 9, 2020. For the reasons expressed above, NMFS determined that a single encounter of killer whales is more likely than the model-generated estimates and has authorized take associated with a single killer whale group encounter (*i.e.*, up to 7 animals) for the Ursa LOA.

For the Europa LOA, use of the exposure modeling produces an estimate of 7 killer whale exposures. Given the foregoing, it is unlikely that even one killer whale would be encountered during this 20-day survey, and accordingly no take of killer whales is authorized through the Europa LOA.

Based on the results of our analysis, NMFS has determined that the level of taking authorized through the LOAs is consistent with the findings made for the total taking allowable under the regulations. See Tables 1 and 2 in this notice and Table 9 of the rule (86 FR 5322; January 19, 2021).

### **Small Numbers Determinations**

Under the GOM rule, NMFS may not authorize incidental take of marine mammals in an LOA if it will exceed “small numbers.” In short, when an acceptable estimate of the individual marine mammals taken is available, if the estimated number of individual animals taken is up to, but not greater than, one-third of the best available abundance estimate, NMFS will determine that the numbers of marine mammals taken of a species or stock are small. For more information please see NMFS’ discussion of the MMPA’s small numbers requirement provided in the final rule (86 FR 5322, 5438; January 19, 2021).

The take numbers for authorization are determined as described above in the **Summary of Request and Analysis** section. Subsequently, the total incidents of harassment for each species are multiplied by scalar ratios to produce a derived product that better reflects the number of individuals likely to be taken within a survey (as compared to the total number of instances of take), accounting for the likelihood that some individual marine mammals may be taken on more than one day (see 86 FR 5322, 5404; January 19, 2021). The output of this scaling, where appropriate, is incorporated into an adjusted total take estimate that is the basis for NMFS' small numbers determinations, as depicted in Table 1 for Shell's Ursa survey and in Table 2 for the Europa survey.

This product is used by NMFS in making the necessary small numbers determinations, through comparison with the best available abundance estimates (see discussion at 86 FR 5322, 5391; January 19, 2021). For this comparison, NMFS' approach is to use the maximum theoretical population, determined through review of current stock assessment reports (SAR; [www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments](http://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments)) and model-predicted abundance information (<https://seamap.env.duke.edu/models/Duke/GOM/>). For the latter, for taxa where a density surface model could be produced, we use the maximum mean seasonal (*i.e.*, 3-month) abundance prediction for purposes of comparison as a precautionary smoothing of month-to-month fluctuations and in consideration of a corresponding lack of data in the literature regarding seasonal distribution of marine mammals in the GOM. Information supporting the small numbers determinations is provided in Tables 1 and 2.

**Table 1. Take Analysis, Ursa LOA.**

Species	Authorized take	Scaled take <sup>1</sup>	Abundance <sup>2</sup>	Percent abundance
Rice's whale	0	n/a	51	n/a
Sperm whale	1,184	500.7	2,207	22.7

<i>Kogia</i> spp.	447 <sup>3</sup>	159.7	4,373	3.7
Beaked whales	5,224	527.6	3,768	14.0
Rough-toothed dolphin	898	257.8	4,853	5.3
Bottlenose dolphin	4,256	1,221.5	176,108	0.7
Clymene dolphin	2,528	725.4	11,895	6.1
Atlantic spotted dolphin	1,700	487.9	74,785	0.7
Pantropical spotted dolphin	11,470	3,291.9	102,361	3.2
Spinner dolphin	3,073	882.1	25,114	3.5
Striped dolphin	987	283.3	5,229	5.4
Fraser's dolphin	284	81.5	1,665	4.9
Risso's dolphin	743	219.1	3,764	5.8
Melon-headed whale	1,661	489.9	7,003	7.0
Pygmy killer whale	391	115.3	2,126	5.4
False killer whale	622	183.4	3,204	5.7
Killer whale	7	n/a	267	2.6
Short-finned pilot whale	480	141.7	1,981	7.2

<sup>1</sup>Scalar ratios were applied to "Authorized Take" values as described at 86 FR 5322, 5404 (January 19, 2021) to derive scaled take numbers shown here.

<sup>2</sup>Best abundance estimate. For most taxa, the best abundance estimate for purposes of comparison with take estimates is considered here to be the model-predicted abundance (Roberts *et al.*, 2016). For those taxa where a density surface model predicting abundance by month was produced, the maximum mean seasonal abundance was used. For those taxa where abundance is not predicted by month, only mean annual abundance is available. For the killer whale, the larger estimated SAR abundance estimate is used.

<sup>3</sup>Includes 24 takes by Level A harassment and 423 takes by Level B harassment. Scalar ratio is applied to takes by Level B harassment only; small numbers determination made on basis of scaled Level B harassment take plus authorized Level A harassment take.

**Table 2. Take Analysis, Europa LOA.**

Species	Authorized take	Scaled take <sup>1</sup>	Abundance <sup>2</sup>	% abundance
Rice's whale	0	n/a	51	n/a
Sperm whale	526	222.5	2,207	10.1
<i>Kogia</i> spp.	199 <sup>3</sup>	71.0	4,373	1.6
Beaked whales	2,322	234.5	3,768	6.2
Rough-toothed dolphin	399	114.6	4,853	2.4
Bottlenose dolphin	1,892	542.9	176,108	0.3
Clymene dolphin	1,123	322.4	11,895	2.7

Atlantic spotted dolphin	756	216.9	74,785	0.3
Pantropical spotted dolphin	5,098	1,463.1	102,361	1.4
Spinner dolphin	1,366	392.0	25,114	1.6
Striped dolphin	439	125.9	5,229	2.4
Fraser's dolphin	126	36.2	1,665	2.2
Risso's dolphin	330	97.4	3,764	2.6
Melon-headed whale	738	217.7	7,003	3.1
Pygmy killer whale	174	51.2	2,126	2.4
False killer whale	276	81.5	3,204	2.5
Killer whale	0	n/a	267	n/a
Short-finned pilot whale	213	63.0	1,981	3.2

<sup>1</sup>Scalar ratios were applied to "Authorized Take" values as described at 86 FR 5322, 5404 (January 19, 2021) to derive scaled take numbers shown here.

<sup>2</sup>Best abundance estimate. For most taxa, the best abundance estimate for purposes of comparison with take estimates is considered here to be the model-predicted abundance (Roberts *et al.*, 2016). For those taxa where a density surface model predicting abundance by month was produced, the maximum mean seasonal abundance was used. For those taxa where abundance is not predicted by month, only mean annual abundance is available. For the killer whale, the larger estimated SAR abundance estimate is used.

<sup>3</sup>Includes 11 takes by Level A harassment and 188 takes by Level B harassment. Scalar ratio is applied to takes by Level B harassment only; small numbers determination made on basis of scaled Level B harassment take plus authorized Level A harassment take.

<sup>5</sup>Modeled take of 16 increased to account for potential encounter with group of average size (Maze-Foley and Mullin, 2006).

Based on the analysis contained herein of Shell's proposed survey activity described in its LOA applications and the anticipated take of marine mammals, NMFS finds that small numbers of marine mammals will be taken relative to the affected species or stock sizes and therefore is of no more than small numbers.

### **Authorization**

NMFS has determined that the level of taking for these LOA requests is consistent with the findings made for the total taking allowable under the incidental take regulations and that the amount of take authorized under the LOAs is of no more than small numbers. Accordingly, we have issued two LOAs to Shell authorizing the take of marine mammals incidental to its geophysical survey activity, as described above.

Dated: December 3, 2021.

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Kimberly Damon-Randall,

Director, Office of Protected Resources,

National Marine Fisheries Service.

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